Cattle Farm Waste Management – Odor Control Checklist

Permit No.: _____

Date: _____

Owner Signature: _____

INSTRUCTIONS FOR USE

- ♦ Odor Control Checklist is required by General Statute 143-215.10C(e)(1)
- ♦ Check any/all the BMPs you will implement on this facility. Items checked/selected become a requirement of the CAWMP.
- ♦ Items in bold or pre-selected are required.
- ♦ Add any site-specific details related to the selected BMPs
- ♦ Include any other odor control measures not listed
- ♦ **NOTE:** Not all BMPs may be cost-effective for every facility. Evaluate each BMP prior to selecting for your facility.

Cause/Source	BMP Option to Minimize Odor	Comments	Site Specific Practices
FARMSTEAD			
♦ Cattle Production	☐ Maintain vegetative or wooded buffers at or near property boundary	• Traps dust and gases, provides dilution and visual screening • May require third party input/approval	
♦ Improper drainage	☐ Grade and landscape so water drains away from facilities and prevent ponding	• Reduce odors and vectors that occur with stagnant conditions	
♦ Road maintenance	☐ Maintain farm access roads and prevent traffic in waste application area	• Prevents spillage during transport and tracking of waste onto public roads	
	☐ Other BMPs – please describe		
MORTALITY MANAGEMENT			
♦ Mortality Decomposition	☒ **Dispose of mortality using method approved by NCDA&CS State Veterinarian. Manage According to CAWMP (Mortality Management Checklist) and permit(s).**	• **Required by statute and permit** • May require third party input/approval	
	☐ Other BMPs – please describe		
FEED			
♦ Odorous Compounds	☐ Limit distiller's grain with solubles (DGS) to 25% of diet dry matter		
	☐ Limit sulfur content to 0.4% of diet dry matter		

Cause/Source	BMP Option to Minimize Odor	Comments	Site Specific Practices
FEED (CONTINUED)			
♦ Ammonia volatilization	☐ Match dietary protein content to animal's Requirement		
	☐ Incorporate ionophores (e.g. monensin) in diet	• Requires proper mixing	
	☐ Use additives proven effective in ammonia control (e.g. yucca)		
	☐ Practice phase feeding		
♦ Dust and odorous gases	☐ Dispose of spoiled feed through composting or direct land application per agronomic recommendation		
	☐ Minimize spilled feed		
	☐ Other BMPs – please describe		
BARN			
♦ Wet manure Accumulation	☐ Scrape or flush alleys at least twice daily		
	☐ Scraped alleys – minimum slope of 1%		
	☐ Flushed alleys – minimum slope of 2%		
	☐ Fan ventilation to reduce excess moisture		
	☐ Inspect waters and plumbing for leaks daily and Repair promptly		
	☐ Remove manure from bedding daily		
	☐ Replenish with new bedding weekly		
♦ Ammonia Volatilization	☐ Use sand, dry pine shavings, or peat as bedding		
	☐ Treat bedding, calf pens, and free stalls with additives proven to reduce ammonia emissions	• This may increase solids in lagoon/waste pit	
♦ Dust-borne odorous gases	☐ Mist or sprinkle (with mixing fans) to reduce dust under warm & dry conditions	• Control based on temperature and use timer to prevent excessive wetting	
	☐ Other BMPs – please describe		
BEDDED PACK			
♦ Ammonia	☐ Replenish with carbon rich bedding weekly		
	☐ Level the bedded pack to reduce ponding		
	☐ Treat bedded pack with proven additive		

Cause/Source	BMP Option to Minimize Odor	Comments	Site Specific Practices
BEDDED PACK (CONTINUED)			
♦ Anaerobic Decomposition	☐ Aerate the pack at least twice daily to a minimum depth of 6 in. (composted bedded pack)		
	☐ Fan ventilation to reduce excess moisture		
	☐ Other BMPs – please describe		
MILKING PARLOR AND HOLDING PEN			
♦ Manure Accumulation	☐ Clean walls and floors during/after each milking		
	☐ Install manure gutter/trough	• To reduce manure splatter in milking parlor	
	☐ Flush exit alley after each milking		
	☐ Other BMPs – please describe		
DRY/OPEN/LOAFING LOT			
♦ Manure Accumulation	☐ Grade paved areas with minimum 1% slope	• To prevent puddle formation and for positive drainage.	
	☐ Grade earthen areas with minimum 2% slope	• To prevent puddle formation and for positive drainage.	
♦ Anaerobic Decomposition	☐ Remove manure weekly	• To maintain 1-2 in of compacted manure in earthen lots	
	☐ Inspect waterers and plumbing for leaks daily and repair		
♦ Dust-borne odorous Gases	☐ Top dress earthen surface with crop residue		
	☐ Use sprinkler during dry weather to reduce dust		
	☐ Other BMPs – please describe		
MANURE DRY STACK			
♦ Anaerobic Decomposition	☐ Divert clean runoff from outdoor stacks		
	☐ Divert liquid drainage to storage tank, basin, or lagoon		
	☐ Store in shed/under roof		
	☐ Cover outdoor stacks with tarp or plastic		
	☐ Compost manure		
	☐ Other BMPs – please describe		

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SETTLING BASIN			
♦ Excessive solids buildup	☐ Remove solids every 4 months		
	☐ Other BMPs – please describe		
SETTLING LANE			
♦ Excessive solids buildup	☐ Clean out at least twice weekly		
	☐ Other BMPs – please describe		
WASTE STORAGE STRUCTURE OR LAGOON			
♦ Odorous Gases	☐ Maintain proper lagoon volume	• Sufficient liquid volume/depth is required for proper anaerobic treatment – only applies to lagoons	
	☐ Load at bottom or mid-depth to reduce turbulence		
	☐ Use correct lagoon start-up procedures	• Only applies to lagoons	
	☐ Manage sludge levels based on annual sludge survey as required by permit	• Only applies to lagoons	
	☐ Keep spilled feed or foreign debris out to prevent excess solids accumulation		
	☐ Use permeable cover – (if not anaerobic digestion)	• Cover could be 8-in floating straw cover	
	☐ Use impermeable cover/anaerobic digester	• Methane must be flared if not utilized	
	☐ Install/use sedimentation basin		
	☐ Install/use solids separatpr		
	☐ Aerate for odor control	• May be needed during spring turnover or under shock Loading conditions. Target oxygen concentration in Top 2 feet of a lagoon should be 0.5 mg/L	
	☐ Use proven biological or chemical additives	• Some additives may increase solids accumulation	
	☐ Other BMPs – please describe		

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LAND APPLICATION			
♦ Odorous gases	☒ **Land application in accordance with CAWMP**		
	☒ **Pump intake near liquid surface**	• **Required by rule 15A NCAC 02D .1802**	
	☐ Pump from second stage lagoon		
	☐ Follow good neighbor policy	• Avoid application on known weekends, special days, or holidays/eves if possible	
	☐ Increase setbacks beyond those required by statute, rule, or permit		
	☐ Operate at minimum recommended pressure		
	☐ Apply during favorable wind conditions, (especially for traveling guns or impact sprinklers)	• Recommend checking predicted average hourly wind speed within 24 hours prior to anticipated start	
	☐ When practical, apply waste on sunny days rather than cool, overcast days	• Allows for vertical dissipation of odor	
	☐ When possible, apply waste mid-morning to late-afternoon – not early morning or evenings	• Allows for better vertical dissipation of odor	
	☐ For traveling guns, use taper-ring or taper-bore nozzles	• Less odor and drift than ring nozzles	
	☐ For traveling guns, use largest-available nozzle that provides acceptable application uniformity		
	☐ Replace impact sprinklers with low-drift nozzles on center pivots and linear move systems.		
	☐ Use hose-drag system		
	☐ Use injection method for waste application		
	☐ Transport waste in covered vehicles/tankers		
	☐ Inspect waste spreader for leaks prior to transport		
	☐ Wash residual waste from spreader after use		
	☐ Other BMPs – please describe		

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SLUDGE DISPOSAL			
♦ Odorous gases	☐ Transport sludge in covered vehicles/tankers		
	☐ Apply in thin, uniform layers	• Speeds drying and prevents ponding	
	☐ Incorporate land-applied sludge as soon as practical after application, and in accordance with permit.	• **Required within 48 hours or prior to next rain event, whichever is first, for conventionally tilled bare soils**	
	☐ Use injection method for sludge application		
	☐ Dewater sludge prior to application		
	☐ Use alternatives to land application, such as compost, gasification, energy generation, etc.		
	☐ Wash residual waste from spreader after use		
	☐ Other BMPs – please describe		
SILAGE AND OTHER FEED STORAGE			
♦ Leachate and runoff	☐ Divert to waste management system		
	☐ Treat in vegetative buffer		
	☐ Divert runon away from storage		
♦ Odorous Gases	☐ Dispose of spoiled feed through composting or land application		
	☐ Other BMPs – please describe		
FEEDLOT			
♦ Anaerobic Decomposition	☐ Divert runon water from entering feedlot		
	☐ Provide at least 2% slope to improve drainage		
	☐ Remove manure regularly to maintain only 1-2 inches of manure on surface		
♦ Ammonia odor	☐ Use additives proven effective in ammonia control		
♦ Dust	☐ Reduce stocking density		
	☐ Sprinkle water to control dust	• Too much watering can cause odor and fly problems	

ADDITIONAL INFORMATION	AVAILABLE FROM:
Air Management Practices Assessment Tool (AMPAT)	www.extension.iastate.edu/ampat/
AHG-538-A Certification Training for Animal Waste Management Systems: Type A	NC Division of Water Resources
EBAE 103-83 – Lagoon Design and Management for Livestock Manure Treatment and Storage	www.bae.ncsu.edu
EBAE Fact Sheet – Calibration of Manure and Wastewater Application Equipment	www.bae.ncsu.edu
NC NRCS Standard 359 – Waste Treatment Lagoon	www.nrcs.udsa.gov
NC NRCS Standard 380 – Windbreak/Shelterbelt Establishment	www.nrcs.udsa.gov
NC NRCS Standard 422 – Hedgerow Planting	www.nrcs.udsa.gov
NC NRCS Standard 442 – Sprinkler System	www.nrcs.udsa.gov
Nuisance Concerns in Animal Manure Management: Odors and Flies; PRO107 1995 Conference Proceedings	Florida Cooperative Extension Service